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MEASLES

DURING THE YEAR

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MEASLES IN MICHIGAN

DURING THE YEAR ENDING DECEMBER 31, 1890.

REPORT COMPILED FROM REPORTS TO AND CORRESPONDENCE OF THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH.

Reprinted from the Nineteenth Annual Report of the Secretary of the Michigan State Board of Health, for the Fiscal Year ending June 30, 1891.

Reprint No. 383.

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MEASLES IN MICHIGAN.

DURING THE YEAR ENDING DECEMBER 31, 1890.

[Reprinted from the Annual Report of the Michigan State Board of Health for the year 1891.]
[REPRINT NO. 383.]

There were reported to the Secretary of the State Board of Health in all 421 outbreaks of measles, in 407 local jurisdictions, as having occurred in Michigan during the year 1890; and in these outbreaks there were reported to have occurred 11,911* cases and 140* deaths. For the preceding year, 1889, there were reported only 2,899 cases and 28 deaths in 148 local jurisdictions. Each year the State Board of Health is making more effort to get local health officials to take measures to prevent the spread of measles, and to make reports to this office concerning that disease in their localities, and it is probable that a larger proportion of the actual numbers of cases and deaths were reported in 1890 than in 1889.† But the principal reason why there were so few cases and deaths from measles reported in 1889 is that measles runs in waves, the maximum crests of which are about 7 or 8 years apart, and a trough between two waves of measles fell in the year 1889. This may be seen by referring to Table 1, and the accompanying diagram.

TABLE 1.—*Exhibiting the reported number of deaths from measles per 100,000 persons living in Michigan in each of the 24 years, 1869-91. Compiled from the Secretary of State's Vital Statistics of Michigan. (Population estimated by average annual increase, by Dr. Wilbur, Chief of Vital Statistics in State Department.)*

Year.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Deaths	8.66	12.88	4.72	5.45	14.12	18.56	3.37	9.50	8.10	4.13	1.03	10.49

Year.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.
Deaths	7.63	15.21	8.68	14.54	7.91	2.04	6.75	14.56	20.62	5.08	10.94	10.51

* Only the 37 cases which died were reported from the city of Detroit. If in that city the deaths were the same per cent of the cases as was reported for the rest of the State (.87 of one per cent), 4,252 cases of measles occurred in that city during the year 1890, making the number of cases for the whole State 16,126, instead of 11,911 as given above. But probably not half of the cases of measles were reported, as is evidenced in the note following this.

† Probably not half of the cases and deaths are yet reported; this is evident from the fact that for the year 1890 there were reported to the Secretary of State 229 deaths from measles; and it is well known that not all deaths are reported to the Secretary of State. The Secretary of the State Board of Health estimates that in order to equal the actual number of deaths, the reported deaths should be increased by forty per cent. If this is done, the probable number of deaths from measles in 1890 is found to be 321.

Reported Deaths from Measles in Michigan, 24 Years, 1868-91.

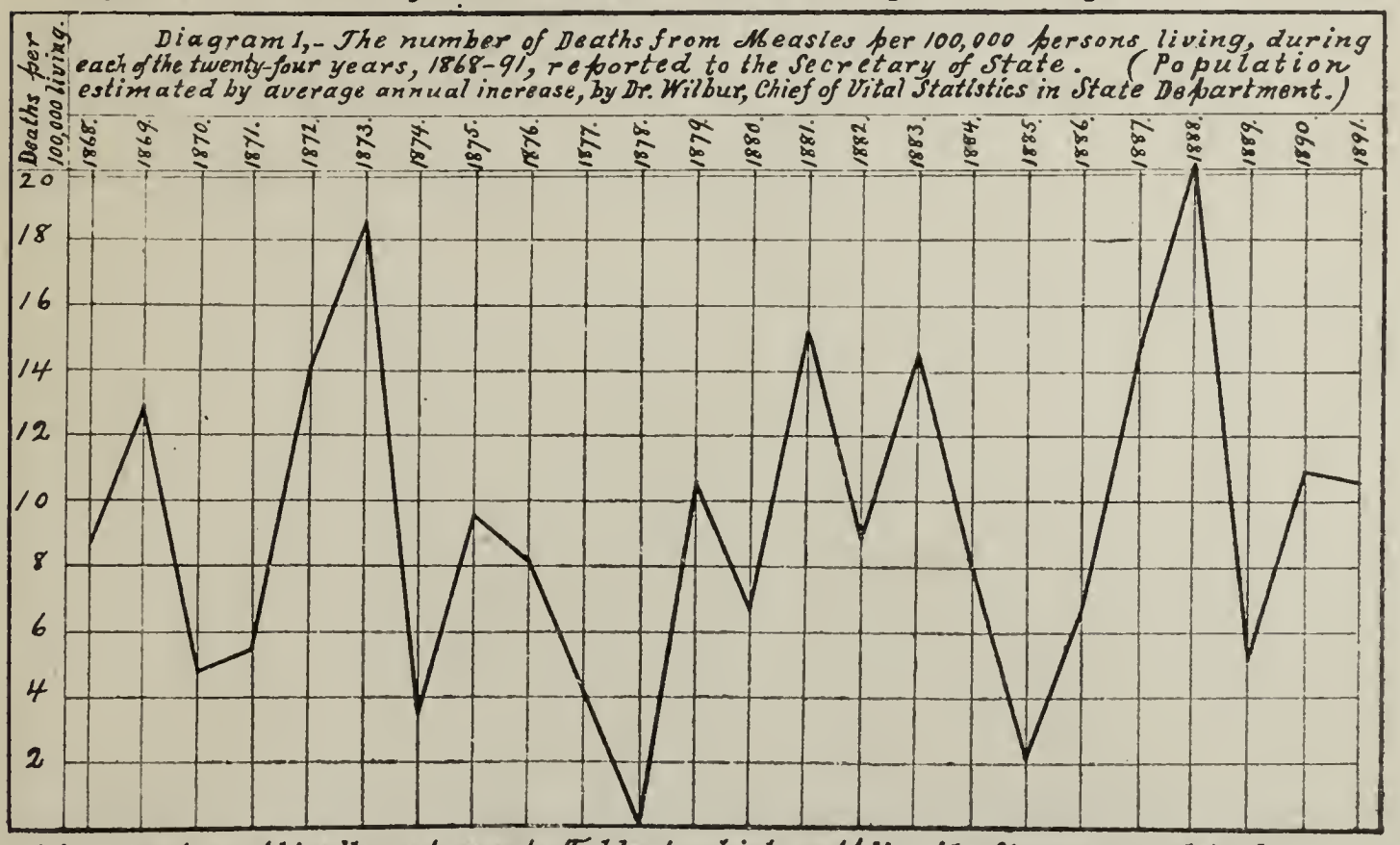

Diagram 1, graphically represents Table 1 which supplies the figures in detail.

MEASLES SHOULD BE RESTRICTED.

As yet very little effort is made in localities to restrict measles, as there is quite a prevalent but erroneous idea that measles is not a dangerous disease. The following are some important reasons which have led the Michigan State Board of Health to class measles, for the purpose of restriction, with "diseases dangerous to the public health": (1) it is a communicable disease and therefore preventable; (2) it causes more than two hundred deaths each year in Michigan; (3) it causes several thousands of cases of sickness each year; (4) it frequently injures or destroys the organs of sight or hearing of those who survive the disease[1]; (5) it frequently prepares the way for and is closely followed by pneumonia and consumption*; (6) there is danger of measles becoming as prevalent in Michigan as it now is in England where it destroys more lives than diphtheria and scarlet fever combined.†

As may be seen by Table 2, isolation and disinfection were reported to have been enforced in only 6 of the 419 outbreaks of measles; and these measures were both reported to have been neglected in 57 outbreaks. The difference, in favor of isolation and disinfection, is very marked,—the average number of cases per outbreak where isolation and disinfection were neglected having been 84.54, and the deaths .77; and in the 6 outbreaks where these measures were enforced the average number of cases was only 3.16, and there were no deaths. In two outbreaks isolation, only, was reported as having been enforced, and one outbreak disinfection, only, was reported as having been enforced. In the 351 outbreaks in the reports of which isolation or disinfection or both were not mentioned or the state-

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* Atkinson, in Wood's Reference Handbook of the Medical Sciences, Vol. IV, p. 681; Quain, Dictionary of Medicine, p. 927; Ziemssen, Cyclopedia of the Practice of Medicine, Vol. II, pp. 102-106.

† According to the Fifty-first Annual Report of the Registrar-General, of Births, Marriages and Deaths in England, p. lii,—during the 4 years 1884-8 the average annual number of deaths, per million persons living, from scarlet fever and diphtheria combined was only 395, while from measles alone it was 577.

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ments were doubtful, considerable effective work was apparently done in the way of isolation and disinfection. The result is seen by comparing the average numbers of cases and deaths in this "doubtful" column with those in the column headed "Isolation and Disinfection Neglected." In the "doubtful" column the average number of cases was only 17.92 and the deaths .11; in the "neglected" column the average number of cases was 84.54 and the deaths .77. In other words, there were seven times as many deaths and nearly five times as many cases in those outbreaks known to be neglected, as in those outbreaks classed as "doubtful" because the reports were not sufficiently definite to be classed as certainly "isolated and disinfected." If in the 353 outbreaks in the "doubtful" column there had been no isolation or disinfection, it is probable that the average numbers of cases and deaths would have been about the same as in the 57 outbreaks in which both isolation and disinfection were known to have been neglected, or an average of 84 54 cases and .77 deaths per outbreak, or a total of 29,843 cases and 272 deaths in the 353 outbreaks. Taking from these the 6,326 cases and 59 deaths that occurred, there remain 23,517 cases and 213 deaths indicated as having been prevented by isolation and disinfection in these 353 outbreaks.

It is to be hoped that health officers will make all possible effort to get the people and attending physicians to coöperate with them in restricting measles by strict isolation and thorough disinfection.

TABLE 2.—*Exhibiting the numbers of Outbreaks, Cases and Deaths from Measles in Michigan during the year 1890, and also the average numbers of Cases and Deaths per Outbreak in each of the following groups of Outbreaks: (1) All Outbreaks; (2) the 353 Outbreaks in which Isolation or Disinfection or both were Neglected or the statements were Doubtful; (3) the 2 Outbreaks in which only Isolation was Enforced; (4) the 1 Outbreak in which only Disinfection was Enforced; (5) the 57 Outbreaks in which both Isolation and Disinfection were Neglected; and (6) the 6 Outbreaks in which both Isolation and Disinfection were Enforced.*

	(1) All Outbreaks.*			(2) Isolation or Disinfection not mentioned or statements Doubtful.			(3) Only Isolation Enforced.			(4) Only Disinfection Enforced.			(5) Isolation and Disinfection Neglected.			(6) Isolation and Disinfection Enforced.		
	Outbreaks.	Cases.	Deaths.	Outbreaks.	Cases.	Deaths.	Outbreaks.	Cases.	Deaths.	Outbreaks.	Cases.	Deaths.	Outbreaks.	Cases.	Deaths.	Outbreaks.	Cases.	Deaths.
Total	419	11,189	103	353	6,326	59	2	17	0	1	3	0	57	4,819	44	6	19	0
Average	----	26.70	.25	----	17.92	.11	----	8.50	0	----	3	0	----	84.54	.77	----	3.16	0

* The number of outbreaks, cases, and deaths given in this column differ from those given in the first paragraph of this article, those from Detroit and Grand Rapids not being included in this table, because in those cities measles is present throughout the year, and as the reports are now made there is no way of distinguishing separate outbreaks.

INFLUENCE OF AGE IN MEASLES.

The reports of local health officials in Michigan for the year 1890, gave the ages of 3,367 persons who were sick with measles, and of 21 persons

who died of that disease. Table 3 represents, in certain age-groups, (1) the number of cases and (2) the number of deaths from measles; (3) the per cent that the cases in each group were of all cases of measles; (4) the per cent that the deaths in each group were of all deaths from measles; and (5) the per cent that the deaths in each group were of the cases in each group respectively,—compiled from all reports for the year 1890 which stated the ages.

By this table (3) it may be seen that the greatest proportion of cases of measles occurred in persons from 5 to 10 years of age,—over one-third (37.87 per cent) of all cases having occurred in that period of age. The next highest five-year period is the first five years of age, "0-5." From the second five-year period the numbers of cases grade downward, each succeeding period being lower than the preceding period.

The probable reason for the large proportion of cases in persons from 5 to 10 years of age is that a larger proportion of children commence going to school in that period than at any other (the schools being centers of infection in localities where cases of measles are not strictly isolated); and that a large proportion of persons in the later age-periods are protected by having had measles in earlier ages.

By Table 3 it may also be seen that the greatest proportion of deaths occurred in the first five-year period, over half of all deaths (57.1 per cent) having occurred in that age-period; and of these five years the greatest proportion of deaths (23.8 per cent of all deaths from measles) occurred in the second year of age.

The last line of this table, giving the per cent the deaths in each group were of the cases in each group respectively, is perhaps the most important one. When the data for several years can be combined in a line like this, it will go far towards settling the question as to the age in which there is least danger of a case of measles proving fatal in Michigan. The data for the one year, 1890, indicate that there is greatest danger of a case proving fatal during the first five years of age, and that there is least danger from about 5 or 10 to 25 or 30 years of age,—the per cent of cases proving fatal having been: in children under 5 years of age, 1.54; in persons from 5 to 25, .29; and in persons from 25 to 55, 1.14.

There is an erroneous and very harmful belief, quite prevalent among parents, that measles cannot ultimately be escaped any more than teething, and that the least dangerous time for persons to have the disease is while quite young children,—the reverse of the facts as shown above. As a result of this mistaken belief there is frequently presented the shocking spectacle of a mother deliberately exposing her young child to measles, like the devoted but deluded Indian mother who, in tears, consigns her babe to the "sacred river" Ganges, to become food for crocodiles, in the vain belief that it is best for her child. The following, quoted from the report of Dr. G. C. Hafford, health officer of the village of Manistique, relative to the difficulties which he encountered in endeavoring to restrict an outbreak of measles in that village is an instance illustrating the force of this mistaken belief, and, in this respect, his report is representative of the reports of many health officers: "Many people, wanting children to have measles while small, would intentionally expose them."

TABLE 3.—*Exhibiting, in certain Age-Groups, the number of Cases and the number of Deaths from Measles; the per cent that the Cases in each group were of All Cases; the per cent that the Deaths in each group were of All Deaths; and the per cent that the Deaths in each group were of the Cases in that group,—Compiled from all reports for the year 1890 which stated the ages.*

	Number and per cent of Cases and Deaths in certain Age-groups.																
Ages in Groups of Years	All Ages.	0-1.	1-2.	2-3.	3-4.	4-5.	0-5.	5-10.	10-15.	15-20.	20-25.	25-30.	30-35.	35-40.	40-45.	45-50.	50-55.
No. of Cases	3,363	84	143	156	191	205	779	1,275	639	318	179	71	54	28	11	10	2
Per cent the cases in each group were of all cases.	100	2.49	4.25	4.64	5.68	6.09	23.16	37.91	19.00	9.46	5.32	2.11	1.61	0.83	0.33	0.30	0.06
No. of Deaths	21	3	5	3	0	1	12	3	1	2	1	0	0	1	0	1	0
Per cent the deaths in each group were of all deaths	100	14.3	23.8	14.3	0	4.8	57.1	14.3	4.8	9.5	4.8	0	0	4.8	0	4.8	0
Per cent the deaths in each group were of cases in that group	0.62	3.57	3.50	1.92	0	0.49	1.54	0.24	0.16	0.63	0.56	0	0	3.57	0	10.00	0
				1.54					.29					1.14			

SOURCE OF CONTAGIUM OF OUTBREAKS OF MEASLES.

Of the 419 outbreaks of measles reported to this office, as having occurred in the year 1890, the local health officials reported relative to the source of contagium in ways which may be summarized as follows:—Traced to a former case, 146; probably traced to a former case, 3; unknown, 91; not reported, 179.

TABLE 4.—*Reported Source of Contagium of Outbreaks of Measles in Michigan during the year 1890.*

Source.	Numbers of Outbreaks.
Traced to a former case	146
Probably traced to a former case	3
Unknown (includes 9 reported "epidemic")	91
Not stated	179
All outbreaks	419

TABLE 5.—*First, second, and third localities, where the second locality was infected with measles from the first, and the third was infected from the second; and the numbers of cases and deaths from measles in the first, second, and third localities. (Compiled from reports of health officers who were able to trace the source of contagium to other localities.)*

Primary Localities from which Measles Spread.	In First Locality.		Secondary Localities infected from Primary.	In Second Locality.		Tertiary Localities infected from Secondary.	In Third Locality.	
	Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.
Berrien county: Galien township	1	0	Berrien county: Galien village	1	0			
Berrien connty: Lake township	*	----	Van Buren county: Hartford village	3	0			
Branch county: Butler township	2	0	Hillsdale county: Litchfield village	63	0			
Calhoun connty: Albion city	303	2	Calhoun county: Clarence township	7	0			
			Jackson connty: Spring Arbor	1	0			
			Hillsdale connty: Litchfield village	1	0			
Calhonn county: Homer village	100	2	Calhoun county: Homer township	5	0			
Cass county: Dowagiac city	3	0	Cass county: Silver Creek township	9	0			
			Volina township	50	0			
			Van Buren county: Hartford village	1	0			
Clinton county: St. Johns village	500	5	Gratiot connty: Alma village	8	2			
Crawford county: Grayling city	*	----	Crawford county: Grove township	5	0			
Eaton county: Eaton Rapids	*	----	Lenawee county: Rome township	1	0			
Genesee connty: Flushing village	*	----	Genesee county: Clayton township	6	0			
Gladwin county: Grant township	*	----	Gladwin county: Billings township	6	0			
Grand Traverse county: Traverse City	*	----	Grand Traverse county: Long Lake township	2	0			
Gratiot county: Fulton township	*	----	Gratiot county: Newark township	2	0			
Hillsdale county: Hillsdale city	22	0	Hillsdale connty: Moscow township	8	0			
Honghton county: Calnmet village	*	----	Houghton county: Adams township	275	0			
Houghton county: Red Jacket village	2	0	Keweenaw connty: Sherman township	13	0			
Hnron county: Meade township	21	0	Hnron county: Bad Axe village	17	0	Huron county: Sheridan township	22	0
Sand Beach village	300	10	Sanilac county: Forester township	20	0			
Ingham county: Lansing city	*	----	Ingham county: Meridian township	9	0			
Mason city	*	----	Webberville village	100	1			

* This outbreak was not reported to this office by the health officer of the "first" locality at the time it occurred.

TABLE 5.—Continued.

Primary Localities from which Measles Spread.	In First Locality.		Secondary Localities infected from Primary.	In Second Locality.		Tertiary Localities infected from Secondary.	In Third Locality.	
	Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.
Ionia county: Otisco township	*	...	Mecosta county: Morley village	51	1	Mecosta county; Aetna township	25	0
Isabella county: Mt. Pleasant city	*	....	Midland county: Coleman village	1	0			
Jackson county: Jackson city	*	....	Lenawee county: Ogden township	1	0			
Kalkaska county: Kalkaska village	*	....	Kalkaska county: Rapid River township	51	1	Kalkaska county: Cold Spring tp.	7	0
			Orange township	21	0			
			Baraga county: Midville village	16	0			
			Eaton county: Charlotte city	21	0			
Kent county: Grand Rapids city	754	3	Kent county: Walker township	8	0			
			Muskegon county: Whitehall village	2	0			
Manistee county: Cleon township	*	....	Manistee county: Morilla township	14	0			
Mecosta county: Deerfield township	15	0	Mecosta county: Morley village	2	0			
Midland county: Midland city	*	....	Midland county: Lee township	11	0			
Montcalm county: McBride village	*	....	Montcalm county: Ferris township	75	1			
Montcalm county: Greenville city	*	....	Wayne county: Northville village	1	0			
			Muskegon county: No. Muskegon village	40	0			
Muskegon county: Muskegon city	225	2	Whitehall village	1	0			
			Wexford county: Wexford township	1	0			
Oakland county: Oxford township	*	....	Lapeer county: Metamora township	13	0			
Oakland county: Lyons township	*	....	Oakland county: Novi township	1	0			
Oakland county: South Lyons village	10	....	Livingston county: Brighton township	5	0			
Otsego county: Lake township	*	....	Ogemaw county: Beaver Lake township	3	0			
Saginaw county: Chesaning township	15	0	Saginaw county: Chesaning village	24	0	Saginaw county: Albee township	150	1
			Shiawassee county: New Haven township	....	....			
Saginaw county: Merrill village	*	....	Saginaw county: Lakefield township	1	0			

* This outbreak was not reported to this office by the health officer of the "first" locality at the time it occurred.

TABLE 5.—CONTINUED.

Primary Localities from which Measles Spread.	In First Locality.		Secondary Localities infected from Primary.	In Second Locality.		Tertiary Localities infected from Secondary.	In Third Locality.	
	Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.
Saginaw county: Saginaw city	236	3	Midland county: Homer township	20	0			
Saginaw county	----	----	Clare county: Hayes township	8	0			
Tuscola county: Mayville village	*	----	Tuscola county: Dayton township	3	0			
Van Buren county: Decatur village	75	0	Van Buren county: Decatur township	1	0			
Lawton village	*	----	Porter township	75	0			
Washtenaw county: Ann Arbor city	*	----	Leelanaw county: Bingham township	8	0			
			Livingston county: Unadilla township	50	0			
			Macomb county: Lenox township	19	0			
Wayne county: Detroit city	*	----	St. Clair county: Columbus township	20	0			
			Wayne county: Bedford township	4	0			
Wayne county: Van Buren township	*	----	Washtenaw county: Superior township	3	0			
Wexford county: Cadillac city	101	6	Manistee county: Manistee city	3	0			
Outside the State.								
Canada	----	----	Ionia county: Campbell township	1	0			
			Calhoun county: Burlington township	1	0			
Chicago	----	----	Mecosta county: Aetna township	2	1			
New Carlisle: Indiana	----	----	Berrien county: Galien village	1	0			
South Bend: Indiana	----	----	Cass county: Calvin township	19	0			
Kansas	----	----	Oakland county: Pontiac city	150	0			
New York city	----	----	Marquette county: Michigamme township	10	0			
			Allegan county: Plainwell village	2	0			
Ohio	----	----	Branch county: Coldwater city	57	0			
			Lenawee county: Morenci village	1	0			
Marquette: Wisconsin	----	----	Baraga county: Baraga township	5	0			

* This outbreak was not reported to this office by the health officer of the "first" locality at the time it occurred.

PROPORTION OF MEASLES IN THE DIFFERENT MONTHS OF THE YEAR 1890.

Table 6 exhibits the proportion of measles reported in each month of the year 1890. The *first* line gives the per cent of all weekly postal-card *reports*, made by physicians in active general practice, which reported the presence of measles under their observation. The *second* line gives the average per cent of all these *reporters* who stated the presence of measles. The *third* line states the average order of prevalence of measles in the list of diseases reported. The *fourth* line represents the *prevalence* of measles, being a combination of the first and third lines of this table (the method of combining them is explained on pages 122–3 of the Annual Report of this Board for the year 1890). In this third line the smallest numbers indicate the greatest prevalence,—for instance, May is 1 or *first* in prevalence,—more measles in May than in any other month; June is 2 or *second* in prevalence; March is 3 or *third* in prevalence; and so on. The *fifth* line represents by months the number of outbreaks of measles reported to this office by health officers and clerks, including only the reports which gave the dates of outbreaks,—reports of 46 outbreaks did not give dates and, of course, those outbreaks could not be included in this line.

The evidence in the various lines of this table (6) seems to indicate that in Michigan measles is most prevalent in the first half of the calendar year, the maximum occurring about May or June and the minimum about August or September. But this evidence is only for a single year, and might, therefore, be exceptional. In Exhibit XX., page 137, of this Annual Report for 1891, is a statement of the average per cent of weekly card reports stating the presence of measles by months for the thirteen years 1877–89, from which it appears that the maximum occurs in May, and the minimum in October.

TABLE 6.—*Measles in Michigan during the year 1890, exhibiting, by months, the per cent of all weekly card-reports received which stated the presence of measles; the average per cent of all observers reporting weekly who reported measles; the average order of prevalence of measles where it was present; and the number of outbreaks reported by health officers and clerks of local boards of health.*

1890.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Per cent of weekly card reports stating presence of measles	12	12	19	19	21	22	22	16	5	3	4	4	7
Average per cent of observers who reported measles present	22	18	29	31	29	35	37	30	12	7	8	6	17
Average order of prevalence where present	3.0	4.4	3.2	2.5	2.8	2.7	2.9	2.9	4.3	3.2	3.3	1.7	2.8
Prevalence*	8	9	5	3	4	1	2	6	12	11	10	7	8
Outbreaks	375	24	30	45	66	74	36	27	5	5	14	18	31

* Explained in the text accompanying this table.

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